



Roberto Barile

Personal and Contact Information

birth date 10/09/1998
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homepage <https://rbarile17.github.io/robertobarile.github.io/>

Current Position

10/24–present **PhD, Computer Science Department - University of Bari**
Semantically enriched *neural-symbolic* methods for Comprehensible Knowledge Graph Re-
finement

Education

2021–2023 **Computer Science MSc - Artificial Intelligence, University of Bari, 110 with highest honors and a special commendation for the academic career**
2017–2020 **Computer Science BSc, University of Bari, 110 with highest honors**

Additional Education and Research

2024 **Winter School on Knowledge Graphs and Large Language Models**

2024 **Reasoning Web Summer School**
<https://2024.declarativeai.net/events/reasoning-web>
2024 **Lectures on Computational Linguistics**
<https://www.ai-lc.it/en/lectures-2/lectures-2024/>
2023 **Ethics and AI, Italian Society for Ethics in Artificial Intelligence (SIpEIA)**
https://sipeia.it/?page_id=402
2023 **International Semantic Web Research Summer School (ISWS)**
<https://2023.semanticwebschool.org/>
2023 **Deep Learn Spring School**
<https://deeplearn.irdta.eu/2023sp/>

Awards and Grants

- 2024 **Honorable mention for AIxIA Leonardo Lesmo Award for the Best Master Thesis on Artificial Intelligence**
- 2023 **International Semantic Web Research Summer School (ISWS)**

Talks

- 2024 **International Conference on Knowledge Engineering and Knowledge Management (EKAW)**
Roberto Barile, Claudia d'Amato, and Nicola Fanizzi. Additive Counterfactuals for Explaining Link Predictions on Knowledge Graphs
<https://event.cwi.nl/ekaw2024/index.html>
- 2024 **Extended Semantic Web Conference (ESWC)**
Roberto Barile, Claudia d'Amato, and Nicola Fanizzi. Explanation of Link Predictions on Knowledge Graphs via Levelwise Filtering and Graph Summarization
<https://2024.eswc-conferences.org/>

Reviewing Activities

Program Committee Member

AAAI Fall Symposium, Large Language Models for Knowledge Graph and Ontology Engineering
<https://kastle-lab.github.io/llms-and-kg-engineering/index>

Sub-reviewer

TheWebConf 2025

<https://www2025.thewebconf.org/>

AAAI 2025

<https://aaai.org/conference/aaai/aaai-25/>

EKAW 2024

<https://event.cwi.nl/ekaw2024/>

CIKM 2024

<https://cikm2024.org/>

ISWC 2024

<https://iswc2024.semanticweb.org>

IJCAI 2024

<https://ijcai24.org/>

Participation in Research Projects

- 2024–present **HypeKG - “Hybrid Prediction and Explanation with Knowledge Graphs”**
in the context of the PRIN (Research Project of National Relevance) 2023-2025; Investment 1.1; “Fund for the National Research Program and Research Projects of National Relevance”, funded by the Ministry of University and Research
<https://rbarile17.github.io/hypekg/>
- 2024 **DIXTI - “Digging into eXplainable soluTIons for link prediction on Knowledge Graphs using large language models”**
CINECA award under the ISCRA initiative, for the availability of high performance computing resources and support

2020 **BSc Thesis**, *Python Framework for Content Based Recommender Systems*
<https://github.com/swapUniba/ClayRS>

Organizing Activities

2023 **Deep Learn 2023 Spring School**
Student Volunteer

Publications

- [1] Barile, R., d'Amato, C., Fanizzi, N.: Explanation of Link Predictions on Knowledge Graphs via Levelwise Filtering and Graph Summarization. In: Meroño Peñuela, A., Dimou, A., Troncy, R., Hartig, O., Acosta, M., Alam, M., Paulheim, H., Lisen, P. (eds.) *The Semantic Web: 21st International Conference, ESWC 2024, Heraklion, Crete, Greece, May 26–30, 2024, Proceedings, Part I*. pp. 180–198. Springer, Cham (May 2024). <https://doi.org/10.1007/978-3-031-60626-7>, CORE: A
- [2] Barile, R., d'Amato, C., di Mauro, N., Ferilli, S., Lomonte, N.: Argumentation ranking semantics as a feature for classification-on automatic evaluation of argumentative essays. In: Confalonieri, R., Porello, D. (eds.) *Proceedings of the 6th Workshop on Advances in Argumentation in Artificial Intelligence 2022 co-located with the 21st International Conference of the Italian Association for Artificial Intelligence (AIXIA 2022)*, Udine, Italy, November 28, 2022. CEUR-WS.org, Online (2022), <https://ceur-ws.org/Vol-3354/paper4.pdf>
- [3] Barile, R., d'Amato, C., Fanizzi, N.: Additive counterfactuals for explaining link predictions on knowledge graphs. In: Alam, M., Rospocher, M., van Erp, M., Hollink, L., Gesese, G.A. (eds.) *International Conference on Knowledge Engineering and Knowledge Management: 24th International Conference, EKAW 2024, Amsterdam, The Netherlands, November 26–28, 2024, Proceedings*. pp. 346–363. Springer, Cham (2025). https://doi.org/10.1007/978-3-031-77792-9_21, CORE: B

Association Memberships

Italian Association of Computational Linguistics (AILC)
<https://www.ai-lc.it/en/>

Italian Association for Artificial Intelligence (AIXIA)
<https://aixia.it/>

Teaching Assistance

Thesis

- 2024 **BSc Thesis co-advisor**
Semantic Annotation of eCommerce web pages through schema.org and application to an industrial case study
- 2024 **BSc Thesis co-advisor**
Evaluation of an Ontology for LLMs and Prompt Engineering Techniques
- 2024 **MSc Thesis co-advisor**
Design and Implementation of an Ontology for LLMs and Prompt Engineering Techniques

Past Work Experiences

- 01/24–10/24 **Research Fellow**, *Computer Science Department - University of Bari*
Hybrid (*neural-symbolic*) methods for predicting and explaining solutions to *Knowledge Graph Completion* tasks
- 11/23–02/24 **Occasional work**, *PLS 2022 research project*, Computer Science Department - University of Bari
Technical and organizational support for laboratory and communication activities regarding educational initiatives aimed at high school students
- 09/20–09/21 **Apprenticeship**, *Full stack Web Developer*, DXC Technology, 70020 Contrada la Marchesa, Bitritto (BA), 70020, <https://dxc.com/it/it>
Project: development of smart logistics tools for the Italian transport ministry
Tech Stack: Java Spring, Angular, Liferay, Postgres, RedHat JBPM, Alfresco
Additional Responsibilities: documentation, data entry, video tutorials

Languages

Italian native
English proficient

Investigated Fields

Knowledge Graphs (KGs), Semantic Web, Machine Learning (ML), Deep Learning, ML and KGs, Knowledge Representation and Reasoning, Ontology Engineering, Explainable AI, Neural-Symbolic AI, Natural Language Processing, Large Language Models, Prompt Engineering, Computer Vision, Big Data, Recommender Systems, MLOps, Sentiment Analysis, Full Stack Web Development, Blockchain

Technological Skills

Programming	C, C++, Java, JavaScript, Haskell, Prolog, Python, PHP, TypeScript
ML and DL	TensorFlow, PyTorch, Scikit-learn, Accelerate
Data analysis	Pandas, NumPy, SciPy, Matplotlib, Plotly, NetworkX
Knowledge Graphs	RDF, RDFS, OWL, SKOS, SPARQL, SHACL, Ontotext GraphDB, Stardog, Protégé, reasoners (HermiT, Pellet, Konclude), OWLlink, OWLAPI, OWLReady2, rdf-lib, RDFa, JSON-LD, Microdata, GRDDL, xHTML, GraphViz, PyKEEN
Typesetting	LaTeX, Markdown, Pandoc
DBs	SQL, PL/SQL, Cypher, MySQL, ORACLE, Postgres, Neo4j, Cassandra
Big Data	Spark, SparkML
Computer Vision	OpenCV, Detectron2
NLP and LLMs	LangChain, HuggingFace, transformers, gensim, spacy, nltk
Web	HTML, CSS
Web frontend	Vue, Angular, React, JQuery, Bootstrap, Tailwind, Hugo, Hugo Blox
Web backend	Java Spring, Java Spring Boot, Hibernate, MyBatis, Liquibase, Django, FastAPI, REST APIs, WSDL, RedHat JBPM, Alfresco
Middleware	RedHat JBoss, Apache Tomcat, Docker, Docker Compose

Data validation	Pydantic
API testing	Postman, SoapUI
DevOps and MLOps	Git, GitHub, GitHub Actions, Prometheus, Grafana, SonarQube, DVC, WandB, Neptune AI
Quality assessment	Pylint, Pynblint, Great Expectations, Deepchecks, Pytest, Locust
Blockchain	Solidity, Truffle, web3.js
HPC	SLURM
Data Formats	JSON, CSV, YAML, XML

Additional Information

LinkedIn	https://www.linkedin.com/in/roberto-barile-308b391b7/
GitHub	https://github.com/rbarile17
Google Scholar	https://scholar.google.com/citations?user=f_R3wIsAAAAJ
ORCID	0009-0007-3058-8692
DBLP	https://dblp.org/pid/342/5973.html

Roberto Barile agrees on permission of the Personal data Protection Code, Leg. Decr. n.196/2003

Bari, 17/07/2024

Roberto Barile

SUBSTITUTE DECLARATION OF CERTIFICATIONS

(Art. 46 e 47 D.P.R. 445 del 28/12/2000)

The undersigned Roberto Barile born in Terlizzi on 10/09/1998 and resident in Terlizzi, telephone: +39 327 314 66 88, email: roberto.barile@uniba.it aware of the penal sanctions, in the case of untruthful declarations and false documents, referred to in art. 76 Presidential Decree 445 of 28/12/2000,

DECLARES

to be in possession of all titles and qualifications listed in this curriculum, and that all publications and documents enclosed are conformed to the original ones. Bari, 17/07/2024

The declarant,
Roberto Barile